



Massachusetts Department of Environmental Protection Source Water Assessment and Protection (SWAP) Report For Atrium Nursing Home

What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

- ? Inventory land uses within the recharge areas of all public water supply sources;
- ? Assess the susceptibility of drinking water sources to contamination from these land uses; and
- ? Publicize the results to provide support for improved protection.

SWAP and Water Quality

Susceptibility of a drinking water source does *not* imply poor water quality. Actual water quality is best reflected by the results of regular water tests.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Prepared by the
Massachusetts Department of
Environmental Protection,
Bureau of Resource Protection,
Drinking Water Program

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Table 1: Public Water System (PWS) Information

| | |
|----------------------|---|
| PWS NAME | Atrium Nursing Home |
| PWS Address | 314 Marion Road |
| City/Town | Middleborough, Massachusetts 02346 |
| PWS ID Number | 4182015 |
| Local Contact | Marsha Macinnis/ Robert J Bouchard (operator) |
| Phone Number | (508) 947-8632/(508) 946-1394 |

| Well Name | Source ID# | Zone I (in feet) | IWPA (in feet) | Source Susceptibility |
|------------------|-------------------|-----------------------------|---------------------------|----------------------------------|
| Well #1 | 4182015-01G | 359 | 1600 | Moderate |
| Well #2 | 4182015-02G | 326 | 1120 | Moderate |

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential sources of contamination, including septic systems, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:

This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination the assessment helps focus protection efforts on appropriate best management practices (BMPs) and drinking water source protection measures. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes:

1. Description of the Water System
2. Discussion of Land Uses within Protection Areas
3. Recommendations for Protection
4. Attachments, including a Map of the Protection Areas

1. Description of the Water System

The Atrium Nursing Home receives its water from two groundwater wells located in a forested area south of the facility. Well #1 has a Zone I of 359 feet and an Interim Wellhead Protection Area (IWPA) of 1600 feet. Well #2 has a Zone I of 326 feet and an Interim Wellhead Protection Area (IWPA) of 1120 feet. The IWPA provides an interim protection area for a water supply well when the actual recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers that can prevent contaminant migration. Please refer to the attached map of the Zone Is and IWPAs.

The wells serving the facility do not require treatment at this time. The DEP requires

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by the water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What is Susceptibility?

Susceptibility is a measure of a well's potential to become contaminated due to land uses and activities within the Zone I and Interim Wellhead Protection Area (IWPA).

public water suppliers to monitor the quality of the water. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1 for a copy of the most recent Consumer Confidence Report. Drinking water monitoring reporting data is also available on the web via EPA's Envirofacts website at http://www.epa.gov/enviro/html/sdwis/sdwis_query.html.

2. Discussion of Land Uses in the Protection Areas

There are some land uses and activities within the drinking water supply protection areas that are potential sources of contamination.

Key issues include:

1. **Zone I;**
2. **Above ground storage tanks;**
3. **Agricultural activities;**
4. **Wastewater and septic systems, and;**
5. **Road.**

The overall ranking of susceptibility to contamination for the wells is Moderate, based on the presence of Moderate threats within the IWPA.

1. **Zone Is** – Currently, the wells meet DEP's Zone I regulations, which allow only water supply related activities in the Zone I and require that the land within the Zone I be owned or controlled by the public water system. The facility's Zone I contains only activities related to the water supply. Please note that systems not meeting DEP Zone I requirements must get DEP approval and address Zone I issues prior to increasing water use or modifying systems.

Recommendations:

- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.
- ✓ Keep non-water supply activities out of Zone I.

2. **Aboveground Storage Tanks (AST)** – There are two ASTs containing diesel fuel located within the IWPA. If managed improperly, above ground storage tanks can be a potential source contamination due to leaks or spills of the chemicals they store.

Recommendation:

- ✓ Aboveground storage tanks in your IWPA should be located on an impermeable surface, and also contained in an area large enough to hold 110% of the complete

Table 2: Table of Activities within the Water Supply Protection Areas

| Potential Contaminant Sources | Zone I | IWPA | Threat | Potential Concern |
|-------------------------------|--------|------|----------|---|
| Agricultural activities | No | Yes | Moderate | Microbial and Non-microbial contamination related to farming (manure, pesticides and fertilizers) |
| Nursing Homes (three) | No | Yes | Low | Microbial, pharmaceutical and operational contaminants: improper management |
| Lawn | No | Yes | Moderate | fertilizer and pesticide use |
| Above ground storage tank | No | Yes | Moderate | leaks, spills |
| Wastewater and septic system | No | Yes | Moderate | bacteria, improper disposal of hazardous materials |
| Road | No | Yes | Moderate | stormwater runoff, spills |

* For more information on Contaminants of Concern associated with individual facility types and land uses please see the SWAP Draft Land Use / Associated Contaminants Matrix on DEP's website - www.state.ma.us/dep/brp/dws/.

Glossary

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. To determine your Zone I radius, refer to the attached map.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone I I. To determine IWPA radius, refer to the attached map.

Zone II: The primary recharge area defined by a hydrogeologic study.

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

liquid volume, should a spill occur.

- ✓ Upgrade all oil/hazardous material storage tanks to incorporate proper containment and safety practices. Any modifications to the AST must be accomplished in a manner consistent with Massachusetts's plumbing, building, and fire code requirements. Consult with the local fire department for any additional local code requirements regarding ASTs.

3. **Agricultural activities** – Cows, horses and chickens are kept within the IWPA. Forestry operations take place within the predominantly forested IWPA. Both of these activities have a potential to impact water quality.

Agricultural Activities Recommendations:

- ✓ Work with farmers in your protection areas to make them aware of your water supply and to encourage the use of a US Natural Resources Conservation Service farm plan to protect water supplies.
- ✓ Work with farmers to investigate grants and loans designed to protect groundwater. See <http://www.nrcs.usda.gov/programs/farmbill/2002/pdf/EQIPFct.pdf> for more information on the USDA Environmental Quality Incentives Program (EQIP). Information on the MA Department of Food Agriculture's Agricultural Environmental Enhancement Program (AEEP) is available on the web at <http://www.state.ma.us/dfa/programs/aEEP/>.

4. **Wastewater and septic systems** – Wastewater and septic systems are located within the IWPA of the wells. If a septic system fails or is not properly maintained it could be a potential source of microbial contamination. Improper disposal of hazardous materials to wastewater and septic systems is a potential source of contamination to the water supply.

Recommendations:

- ✓ Staff should be instructed on the proper disposal of spent hazardous materials. Include custodial staff, groundskeepers, and certified operator.
- ✓ Septic system components should be located, inspected, and maintained on a regular basis. Refer to the attachments for more information regarding septic systems. Avoid septic tank cleaners, especially those with acids and solvents.
- ✓ Educate private septic system owners on proper septic system maintenance and operation.

5. **Road** – Part of Marion Road is within the edge of the IWPA. Runoff and spills from

roads can contaminate public wells.

Recommendation:

- ✓ Maintain contact with the Fire Department and local Department of Public Works about spills and activities on the road.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. The Atrium Nursing Home is commended for protection of the entire Zone I for the facility's drinking water. The facility should review and adopt the key recommendations above and the following:

Priority Recommendations:

Zone I:

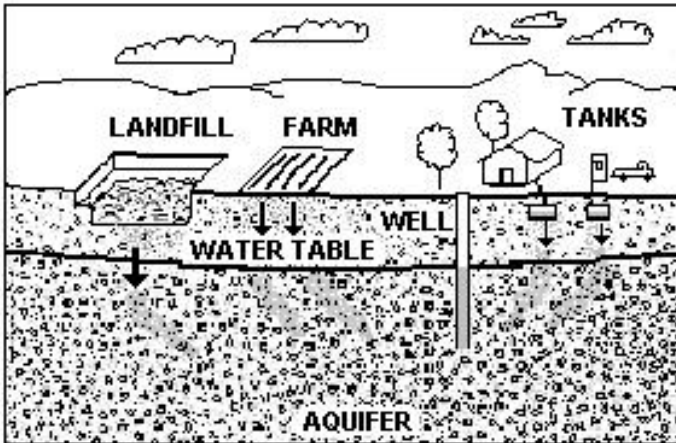


Figure 1: Example of how a well could become contaminated by different land uses and activities.

For More Information:

Contact Isabel Collins in DEP's Lakeville Office at (508) 946-2726 for more information and for assistance in improving current protection measures.

More information relating to drinking water and source protection is available on the Drinking Water Program web site at:

www.state.ma.us/dep/brp/dws/

Additional Documents:

To help with source protection efforts, more information is available by request or online at www.state.ma.us/dep/brp/dws/, including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

Copies of this assessment have been made available to the public water supplier and town boards.

- ✓ Keep non-water supply activities out of the Zone I.
- ✓ Consider well relocation if Zone I threats cannot be mitigated.
- ✓ Prohibit public access to the well and pumphouse by locking facilities.
- ✓ Continue regular inspections of the Zone I. Look for illegal dumping or evidence of vandalism.
- ✓ Use Best Management Practices (BMPs) and restrict activities that could pose a threat to the water supply.
- ✓ Properly manage road and parking lot stormwater drainage in IWPA, include drainage maps in your emergency plan for the water supply.
- ✓ Do not use or store pesticides, fertilizers or road salt within the Zone I.

Training and Education:

- ✓ Train staff on proper hazardous material use, disposal, emergency response, and best management practices; include custodial staff, groundskeepers, certified operator, and food preparation staff. Post labels as appropriate on raw materials and hazardous waste.
- ✓ Post drinking water protection area signs at key visibility locations.
- ✓ Work with your community to ensure that stormwater runoff at the road is directed away from the well and is treated according to DEP guidance.

Facilities Management:

- ✓ Construct, inspect and maintain the integrity of a containment structure for the ASTs.
- ✓ Wastewater and septic system components should be located, inspected, and maintained on a regular basis.

Planning:

- ✓ Work with local officials in town to include the facility's IWPA in an Aquifer Protection District Bylaw and to assist you in improving protection.
- ✓ Supplement the SWAP assessment with additional local information and incorporate it into water supply educational efforts. Use a land use inventory to assist in setting priorities, focusing inspections, and creating educational activities.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under that program. For additional information, please refer to DEP's web site. Other funding opportunities are described in *Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation* at <http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf>.

Citizens and community officials should use this SWAP report to spur discussion of local drinking water protection measures.

6. Attachments

- Map of the Public Water Supply (PWS) Protection Area.
- Recommended Source Protection Measures Fact Sheet
- Your Septic System Brochure
- Industrial Floor Drains Brochure
- Healthy Schools Fact Sheet
- Source Protection Sign Order Form